

Sewers

SANITARY SEWER RECONSTRUCTIONS AND EXTENSIONS

<u>Subtasks</u>	<u>Priority</u>	<u>Estimated Useful Life of Improvement</u>	<u>Project Manager</u>
Replacement/ Rehabilitation of Sanitary Sewer Lines	Essential	40 years	T&ES

Project Summary: This project provides for the construction of new sewer mains and the replacement and rehabilitation of old lines as needed. The project also includes funds for the City's share of the cost of sewer extensions required for development. This is an essential infrastructure maintenance project.

Project Description: In FY 1987, the City initiated an on-going program to reline existing leaking sewers in the City, particularly in the Rosemont and Del Ray areas, in order to prevent stormwater infiltration into sanitary sewers during large storms. In FY 1998, \$340,000 was allocated to perform work under this project. Recent sewer projects completed include Ivor Lane, Beverly Drive, Circle Terrace, Walnut Street, Pine Street, Birch Street, MacArthur Road, Tennessee Avenue and Hemlock Avenue. Streets either under design or under construction include: Timber Branch Drive, West Uhler Avenue, Caton Avenue, Groves Avenue, Forrest Street, Sycamore Street, and Hickory Street.

Relining and repair of existing, aging sanitary sewers City-wide is an ongoing need, funded at \$200,000 each year, from FY 2004 through FY 2009 in the CIP. An additional \$300,000 has been budgeted in FY 2004 to reline the fifty year old clay tile pipe in Old Town, Rosemont and Del Ray. Many future projects for relining are included in the capital plan including Commonwealth Avenue, North Overlook Drive, East Mason Avenue, Enderby Drive, Gilden Drive, Edge Hill Drive, East Glendale Avenue, West Windsor Avenue, South Columbus Street, Mt. Vernon Avenue, Walnut Street, Maple Street, Linden Street, and an additional section of Doris Drive and Chambliss Street.

Sites identified with non-standard existing sanitary sewers that have high maintenance problems that are slated for realignment include the following:

- Diagonal Road: Between King Street and Daingerfield Road;
- The alley between Nelson Avenue and Monroe Avenue; and
- Glendale Avenue at Commonwealth Avenue.

Areas identified for sewer reconstruction prior to street reconstruction include Circle Terrace, Beverly Drive, Walnut Street, and Hemlock Avenue.

While these projects have been identified as needing construction, other projects may be added or substituted as identified.

Construction projects are budgeted at \$220,000 each year from FY 2004 through FY 2009. In addition \$100,000 per year has been budgeted for the design of sanitary sewer projects by outside engineering consultants.

SANITARY SEWER RECONSTRUCTIONS AND EXTENSIONS

Change In Project From Prior Fiscal Years:

- Extend annual funding (\$200,000) for relining of sewers into FY 2009;
- Extend annual funding (\$220,000) for sanitary sewer construction into FY 2009;
- Extend annual funding (\$100,000) for the design of sanitary sewer projects by outside engineering consultants into FY 2009; and
- \$300,000 has been budgeted in FY 2004 for relining 50 year old clay tile pipe in areas of Old Town, Rosemont and Del Ray.

TASK TITLE	UNALLOCATED PRIOR-FY	FY 2004 CURRENT	FY 2005 FY + 1	FY 2006 FY + 2	FY 2007 FY + 3	FY 2008 FY + 4	FY 2009 FY + 5	TOTAL
CONSTRUCTION	160,000	220,000	220,000	220,000	220,000	220,000	220,000	1,480,000
CONSULTANT FEES	0	100,000	100,000	100,000	100,000	100,000	100,000	600,000
RELINING SEWERS	200,000	500,000	200,000	200,000	200,000	200,000	200,000	1,700,000
TOTAL PROJECT	360,000	820,000	520,000	520,000	520,000	520,000	520,000	3,780,000
LESS REVENUES	0	0	0	0	0	0	0	0
NET CITY SHARE	360,000	820,000	520,000	520,000	520,000	520,000	520,000	3,780,000

SEWER REHABILITATION AND POLLUTION ABATEMENT

<u>Subtasks</u>	<u>Priority</u>	<u>Estimated Useful Life of Improvement</u>	<u>Project Manager</u>
Mitigation of Combined Sewer Overflows	Essential	40 years	T&ES
Royal Street Relief Sewer	Essential	40 years	T&ES
Correction of Infiltration/Inflow	Essential	40 years	T&ES
Holmes Run Trunk Sewer	Essential	40 years	T&ES
Sewer Map Update	Essential	As Updated	T&ES
Environmental Restoration	Essential	25 years	T&ES

Project Summary: This project provides for engineering, planning, design and construction of improvements to the City's combined and separate sanitary sewer systems. The project is required to meet federal and State regulations for the control of combined sewer overflows (CSOs) and separate sanitary sewer overflows (SSOs). Additionally, the project will provide flooding and capacity relief in areas where the capacity of existing sewers is insufficient to handle current and projected flows, and ultimately reduce the CSOs. By implementing this project, the City will be proceeding to upgrade its sewer system infrastructure and bringing it into compliance with federal and State regulations.

Mitigation of CSOs: The City's combined sewer system includes areas east of the railroad corridor (primarily Old Town) and is an area of approximately 560 acres. CSO outfalls (discharge points for wet weather overflows) are located at the foot of Pendleton Street and Royal Street and under Duke Street at Hooff's Run.

The City, through its engineering consultant, began studies in the early 1990's to seek alternative approaches to control combined sewer overflows and in 1995 submitted a Long Term Control Plan (LTCP) to the Virginia Department of Environmental Quality (VADEQ). The VADEQ issued the City a permit for its combined sewer system in 1995. Based on the City's studies, the permit calls for the City to operate and maintain the combined sewer system according to the United States Environmental Protection Agency's (USEPA) technology-based best management practices. The practices are known as the Nine Minimum Controls (NMCs) and form part of the National CSO Control Policy. The nine minimum controls which the City implemented for controlling CSO discharges comprise the following:

1. Proper operation and regular maintenance programs for the sewer system and the combined sewer overflows;
2. Maximum use of the collection system for storage;
3. Review and modification of the pretreatment program to assure CSO impacts are minimized;
4. Maximization of flow to the publicly owned and treated works (POTW) for treatment;

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5. Prohibition of CSOs during dry weather;
6. Control of solid and floatable materials in CSOs;
7. Pollution prevention programs that focus on containment reduction activities;
8. Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts; and
9. Monitoring and reporting to effectively characterize CSO impacts and the efficacy of CSO controls.

The VADEQ reissued the City's VPDES permit in August 2001. The re-issued permit provides for the nine minimum controls to be the long term CSO control plan for the City. However, there are requirements for increased management, monitoring, evaluations and review over the five year term of the permit. These increased practices include:

- A five year bacteria monitoring and modeling program for Hunting Creek to assess impacts of CSO discharges from Royal Street and Duke Street (via Hooff's Run) outfalls.
- Additional monitoring, modeling, reporting and evaluation throughout the permit term of the discharges from all CSO outfalls.
- More frequent inspections, increased maintenance activities and more detailed record keeping and performance reporting for all parts of the combined sewer system.

As new end of pipe technology becomes available for solids and floatables control, VADEQ is expected to impose and require that the existing controls be upgraded. The City will be required to re-apply for its permit during FY 2006 and the permit is expected to be re-issued during FY 2007.

There is \$535,000 in prior year unallocated funds available for this project. These funds will be used for the programs required by the permit re-issued in August 2001. Funds in the amount of approximately \$2.4 million will be used to continue the implementation of permit conditions and solids and floatables control for FY 2004 through FY 2009.

Correction of Infiltration/Inflow: This project provides for the evaluation and remediation of infiltration/inflow conditions in older part's of the City's separate sanitary sewer system. The areas include the sanitary sewer systems tributary to the Commonwealth Interceptor and areas in the Holmes Run sewer service area. During wet weather, infiltration and inflow into these older sanitary sewers have created overload conditions causing basement back-ups. This project will identify leaking sewers and connections which allow excessive infiltration/inflow to enter sewers and correct the problem through the repair of the sewers and removal of direct storm water such as down spouts. Loss of capacity due to infiltration/inflow in the Four Mile Run area (tributary to the Commonwealth Interceptor) at times causes sanitary sewer overflows (SSOs) from the Four Mile Run Pump Station.

The correction program was started in FY 1999 when studies were conducted by the City's consultant in the Four Mile Run sewer service area. This area is a tributary to the Four Mile Run Pumping Station and comprises the upper part of the City served by the Commonwealth Interceptor. As a result of these studies, the City's consultant has been conducting field inspections and flow monitoring of the existing sewers. The field

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inspections include street by street TV investigations of sewers followed by visual investigations of connections employing nondestructive methods such as dye and smoke testing to identify the sources of connections to the existing sewers.

The field work and monitoring is being performed by dividing sewer service areas into sections and proceeding through each section sequentially. Field work has been completed in the sanitary sewer systems tributary to the Commonwealth Interceptor and field work in the Holmes Run sewer service area is being scheduled. The studies show that the sanitary sewers require substantial repairs to correct broken and cracked pipe, root intrusion, leaking joints, damaged connections between street sewers and laterals (house sewer connections) and leaking manholes. Most of the conditions can be remediated by internal repair methods such as installation of an internal lining in the pipe. However, some conditions such as broken pipe will require excavation and replacement to restore the structural integrity of the sewer.

The information from the field work completed to date shows that the relining and repairs required to reduce inflow and infiltration to non-excessive quantities and restore structural integrity are substantially greater than previously anticipated.

Substantial funds of approximately \$10.4 million over six years have been budgeted and \$7.4 million in prior year unallocated monies remain, for a total of \$17.8 million to correct conditions in the separate sanitary sewers as identified by the studies, including \$873,000 in grant funds to be awarded to the City in FY 2004 from the United States Environmental Protection Agency (USEPA). After additional monitoring of lateral inspections it is possible that additional funding will likely be required beyond FY 2009.

Royal Street Relief Sewer: This project, approved in FY 2001, provides for the engineering and construction of relief measures to alleviate flooding at the intersection of Pitt and Gibbon Streets. Based on the findings of the consultant, portions of the combined sewer in areas constructed in the early 1900's are inadequate to carry the storm water flows connected to them.

A total of \$2.4 million is remaining in unallocated prior year monies and a total of \$1.8 million is budgeted over three years (FY 2004-FY 2006) to engineer and construct a relief sewer to alleviate flooding at the intersection of Pitt and Gibbon Streets.

Holmes Run Trunk Sewer: This project provides for increasing the capacity in the Holmes Run Trunk sewer line that is required to support the rapid development occurring in the Eisenhower Valley. The engineering studies show that the lining of the existing sewer with specialized materials will provide the needed capacity increase with minimal environmental disruption. The City is proceeding with planning and design as the next steps. Preliminary estimates suggest that approximately \$8.0 million is required for this project although exact cost and timing will be refined after additional planning and designs are completed.

Sewer Map Update: This project will provide for the mapping of the City's sanitary and storm sewer systems. The City does not have a comprehensive inventory of the existing subterranean sanitary and storm sewer systems. Existing maps were last updated in the 1970's and projects completed since that time are not documented or mapped. Once sanitary sewer and stormwater permit regulations, currently being adopted by the U.S. Environmental Protection Agency, are applied to the City, the City will be required to perform much more accurate assessments of the capacity of City sewers and demonstrate compliance with prospective permit requirements. A total of \$1,365,000 over two years is budgeted for this

SEWER REHABILITATION AND POLLUTION ABATEMENT

project including \$1.2 million in prior year unallocated monies, to provide funds to map the City's sewer systems, and these maps will be compatible with and become part of the City's Geographical Information System (GIS).

Environmental Restoration: This project will provide for the restoration of environmentally sensitive sites within the City that have been significantly altered or require action to reduce pollutants from entering the environment. Specific subtasks of the project will focus on sites close to water sources such as streams, wetlands, the Potomac River, or that have an impact on water quality. In an effort to maximize the benefits of this project, these funds will also be used as matching funds to obtain additional grant funding from various State and federal programs for projects such as this. A total of \$325,000 (\$25,000 in prior year unallocated monies and \$100,000 in FY 2004, FY 2006 and FY 2008) has been budgeted for this program.

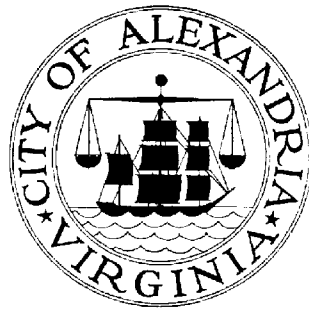
Project Costs to Date: The total allocated to date for Sewer Separation and Pollution Abatement is \$10,849,940.

Change In Project From Prior Fiscal Years:

- The project schedule to evaluate and correct the infiltration/inflow (I/I) problems in the City's separate sanitary sewer system has been revised and accelerated. The schedule to increase the capacity of the Holmes Run Trunk Sewer project has also been revised. To reflect the revised schedules of both of these projects, the funding for both projects has been adjusted. Prior year unallocated monies in the amount of \$3.8 million has been reprogrammed from the Holmes Run project to the I/I project leaving a total of \$1.5 million in unallocated monies in the Holmes Run project. In addition, the remaining funding for Holmes Run, in the amount of \$6.6 million over four years has been deferred until FY 2006-FY 2009. Funding for the I/I project, in the amount of \$10.4 million over four years, has been accelerated and moved up to FY 2004-FY 2007, for a total of \$17.8 million.
- \$250,000 has been budgeted in FY 2009 to continue ongoing repairs to the City's combined sewer system in order to comply with the VPDES permit; and
- \$873,000 will be received from the U.S. Environmental Protection Agency in FY 2004 in support of the Four Mile Run Sewer Service Inflow/Infiltration Remediation project.
- It is proposed that over the next few years the sanitary sewer capital expenses become fully fee supported (as is the norm for most local governments). A specific multi-year plan was approved by City Council in the context of the FY 2004 budget process which calls for an increase of 20-cent in the sanitary sewer rate in order to cover new sanitary sewer debt service included in the Approved FY 2004 operating budget, as well as to cover additional cash capital for sanitary sewers as contained in the Approved CIP.

SEWER REHABILITATION AND POLLUTION ABATEMENT

TASK TITLE	UNALLOCATED PRIOR-FY	FY 2004 CURRENT	FY 2005 FY + 1	FY 2006 FY + 2	FY 2007 FY + 3	FY 2008 FY + 4	FY 2009 FY + 5	TOTAL
COMBINED SEWER MITIGATION	535,190	500,000	600,000	525,000	250,000	250,000	250,000	2,910,190
CORRECT INFILTRATION/ INFLOW	7,360,000	4,587,000	5,450,000	200,000	200,000	0	0	17,797,000
ENVIRONMENTAL RESTORATION	25,000	100,000	0	100,000	0	100,000	0	325,000
HOLMES RUN TRUNK SEWER	1,467,000	0	0	2,405,000	2,000,000	660,000	1,500,000	8,032,000
SEWER MAP UPDATE	1,163,000	101,000	101,000	0	0	0	0	1,365,000
ROYAL STREET RELIEF SEWER	2,400,000	600,000	600,000	600,000	0	0	0	4,200,000
TOTAL PROJECT	12,950,190	5,888,000	6,751,000	3,830,000	2,450,000	1,010,000	1,750,000	34,629,190
LESS REVENUES	200,000	873,000	0	0	0	0	0	1,073,000
NET CITY SHARE	12,750,190	5,015,000	6,751,000	3,830,000	2,450,000	1,010,000	1,750,000	33,556,190



STORM SEWER RECONSTRUCTIONS AND EXTENSIONS

<u>Subtasks</u>	<u>Priority</u>	<u>Estimated Useful Life of Improvement</u>	<u>Project Manager</u>
Extension and Replacement of Storm Sewers	Essential	25 years	T&ES
Channel Restoration	Essential	5 years	T&ES
MS4 Permit Program NPDES Permit	Essential	5 years	T&ES

Project Summary: This project provides for extensions and replacements of storm sewers, and for the reconstruction of deteriorated storm water channels.

Extension and Replacement of Storm Sewers: This continuing essential infrastructure maintenance project is used both for tasks unforeseen at the time of budget preparation and for scheduled projects. \$1,864,500 remains in prior year unallocated monies to address upgrading the Braddock Road and West Street storm sewer outfall to Hooff's Run; the replacement of the 72 inch CM pipe at Edsall Road and Cameron Station that has shown signs of potential structural failure; and for several other projects related to deteriorating conditions and new developments. Reconstructing the sewers in the Braddock Road and West Street intersection will relieve the flooding at the intersection that is caused by insufficient storm sewer capacity. Unallocated funds will also be used for the following projects identified in FY 2004: sewer reconstruction at the 900 block of South Fairfax; sewer separation at the 800 block of South St. Asaph Street; sewer extension on North Quaker Lane between King Street and Osage Street; and sewer reconstruction with street reconstruction on North Ripley Street between Holmes Run and Taney Avenue and on Maple Street between Hooff's Run and Little Street.

Storm sewer projects to be addressed in this CIP include the following:

- The construction of new storm sewers to upgrade the drainage at Frost Street (\$100,000 in prior year unallocated monies), and Lawrence Avenue area (\$150,000 in FY 2004);
- A hydraulic study of the storm water shed to determine capacity inadequacies in various locations of the Commonwealth Avenue storm water outfall system (\$150,000 in prior year unallocated monies).
- The reconstruction of storm sewers as identified in Warwick Village (\$150,000 per year in FY 2004 - FY 2006)

Channel Restoration: This project includes the assessment of City streams and flood control channel projects. Erosion damage, stream corridor condition, grade control structures and storm sewer discharge points will be evaluated and repairs will be prioritized. Designs and construction for stream stabilization/restoration and City stormwater discharge modifications will be accomplished with these monies. The project includes an annual budget of \$200,000 per year for channel restoration work through FY 2009.

STORM SEWER RECONSTRUCTIONS AND EXTENSIONS

Municipal Separate Storm Sewer System (MS4) Permit Program, NPDES Permit: The Federal Water Quality Act of 1987 required that small municipalities obtain storm water discharge permits for their municipal separate storm sewer system (MS4) under Phase II of the National Storm Water Program.

The permit will require at a minimum that the City develop, implement and enforce a storm water management program designed to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP), protect the water quality and satisfy the appropriate water quality requirements of the Clean Water Act. The permit may allow up to five years from the date of the permit issuance for the City to develop and implement the program.

The City will submit an application for a MS4 permit to the Virginia Department of Environmental Quality by March 10, 2003. The City's Storm Water Management Program will have to be fully developed and implemented by the end of the first permit term (2008).

The MS4 Permit will have numerous minimum requirements based on the draft published by the Virginia Department of Environmental Quality including an illicit discharge detection and elimination program and associated concept designs; preliminary concept designs of structural and non-structural floatable controls; and best management practices. Identifying needs and conducting preliminary concept designs for post construction storm water management will be included. In addition to required data collection and reporting activities, this project will fund required public education, outreach, involvement and citizen participation.

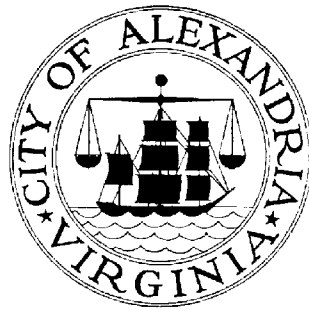
\$300,000 in prior year unallocated monies remain and \$150,000 was allocated in FY 2003 for preparing the application, monitoring, outlining the program for acquiring the VPDES MS4 permit and initiating the implementation of the programs as required by the permit. A new Water Compliance Specialist position has been added to the Transportation and Environmental Services (T&ES) Department FY 2004 operating budget to perform inspections and field work related to water quality compliance in the administration of the City's Watershed Management plan. In addition, \$150,000 has also been added to the T&ES FY 2004 operating budget to implement the MS4 Permit program and to comply with the permit conditions.

Change In Project From Prior Fiscal Years:

- Annual funding for channel restoration, in the amount of \$200,000, has been extended through FY 2009;
- Annual funding for storm sewer construction, in the amount of \$203,000 has been extended through FY 2009; and
- \$450,000 over three years (\$150,000 per year in FY 2004-FY 2006) has been budgeted for the reconstruction of storm sewers as identified in Warwick Village.

STORM SEWER RECONSTRUCTIONS AND EXTENSIONS

TASK TITLE	UNALLOCATED PRIOR-FY	FY 2004 CURRENT	FY 2005 FY + 1	FY 2006 FY + 2	FY 2007 FY + 3	FY 2008 FY + 4	FY 2009 FY + 5	TOTAL
CHANNEL RESTORATION	1,000,000	200,000	200,000	200,000	200,000	200,000	200,000	2,200,000
NPDES STORM WATER PROGRAM	300,000	0	0	0	0	0	0	300,000
CONSTRUCTION	1,864,500	548,000	353,000	353,000	203,000	203,000	203,000	3,727,500
TOTAL PROJECT	3,164,500	748,000	553,000	553,000	403,000	403,000	403,000	6,227,500
LESS REVENUES	0	0	0	0	0	0	0	0
NET CITY SHARE	3,164,500	748,000	553,000	553,000	403,000	403,000	403,000	6,227,500



ORONOCO OUTFALL

<u>Subtasks</u>	<u>Priority</u>	<u>Estimated Useful Life of Improvement</u>	<u>Project Manager</u>
Oronoco Street Outfall	Essential	25 years	T&ES

Project Summary: This project provides funding to address the ground contamination at the Oronoco Sewer Outfall.

Project Description: \$3.1 million in prior year unallocated monies is budgeted to address ground contamination at the Potomac River Oronoco Street Outfall caused by coal tar contaminants from the former City (and then Washington Gas) owned Alexandria Gas Works that operated in the 19th and 20th centuries. The City has been accepted into the Virginia Voluntary Remediation Program for the site with the Virginia Department of Environmental Quality (VDEQ). The City has retained an environmental consultant to study the extent of contamination and to develop and implement a remediation program to clean up the site. Washington Gas is working cooperatively with the City on this matter.

The preliminary site investigation for the site was completed in FY 2001. The next step is to complete a Site Characterization/Risk Assessment and Remedial Alternative Screening Report. The additional sampling needed for the risk analysis and remedial screening has been completed. It is anticipated that the actual report will be submitted to VDEQ in the first half of FY 2003. After VDEQ has reviewed and accepted the report, a Remedial Action Plan will be developed detailing what corrective actions are needed. VDEQ will review the Remedial Action Plan and the City will conduct community outreach efforts on the plan and develop options for corrective actions. This work is scheduled to begin in FY 2003 and anticipated to be completed by FY 2005. The additional funding from a settlement with Washington Gas Light Company, totaling \$926,505, will also be used to fund clean up, monitoring, maintenance and operation costs. The City received installments of \$308,835 in FY 2002 and FY 2003 and will receive the final payment in the same amount in FY 2004. Of this \$926,505 payment to the City, \$308,835 has already been allocated for expenditure.

Changes in Project from Prior Years:

- There has been no change in funding for this project.

ORONOCO OUTFALL

TASK TITLE	UNALLOCATED PRIOR-FY	FY 2004 CURRENT	FY 2005 FY + 1	FY 2006 FY + 2	FY 2007 FY + 3	FY 2008 FY + 4	FY 2009 FY + 5	TOTAL
ORONOCO OUTFALL	3,103,835	308,835	0	0	0	0	0	3,412,670
TOTAL PROJECT	3,103,835	308,835	0	0	0	0	0	3,412,670
LESS REVENUES	308,835	308,835	0	0	0	0	0	617,670
NET CITY SHARE	2,795,000	0	0	0	0	0	0	2,795,000

